

by A. Sterling Calder; The Mariners
News, Va. (H. Armstrong Roberts)

It is believed to have been the
first ship to reach North America in about A.D. 1000.

on's discovery. His brother,
an Indian on one expedi-
America may have ended
Indian attacks. Today, Leif
the United States on Oc-

FRANKLIN L. FORD

IKINGS; VINLAND.

IN (1803-1889), a Swedish-
inventor, introduced the suc-
cess on commercial and naval
ships. He built the *Monitor* for the
U.S. Navy in 1862. The *Monitor*
was a ship with two heavy guns
in a rotating turret. Her successful
battle with the *Merrimack*, at
Petersburg in 1862, dramatized the com-

vinland province. Sweden.

ERIE CANAL

ERIE, *EER ih*, Pa. (pop. 129,231; met. area pop. 263,-654), is a port and manufacturing center on Lake Erie. It lies on a plain 113 feet (34 meters) above the lake. For location, see PENNSYLVANIA (political map).

About 2,200 vessels use the port of Erie each year. Many ships entering the port carry iron ore from northern Minnesota and pulp wood from Canada. Outgoing ships carry chiefly coal. Two U.S. highways, two airlines, and three freight railroads serve the city. Erie has a branch of the General Electric Company. The Hammermill Paper Company is the state's largest paper mill. Erie's industries include electric generators, locomotives, motors, and paper and rubber products.

Erie is the home of Gannon, Mercyhurst, and Villa Maria colleges. A campus of Pennsylvania State University is also there. The city has about 60 public and private schools, a museum, a library, and a zoo.

In 1753, the French built Fort Presque Isle on a peninsula extending from the shores of Lake Erie. Later, the British occupied it. Seneca Indians burned the fort in 1763. The town of Erie was laid out in 1795. Most of the ships of Commodore Oliver H. Perry's fleet, which defeated the British in 1813, were built at Erie. Perry's flagship, the *Niagara*, is kept on exhibition in the city. Erie became a city in 1851. It has a mayor-council government and is the seat of Erie County. S. K. STEVENS

ERIE, LAKE. See LAKE ERIE.

ERIE CANAL was the first important national waterway built in the United States. It crossed New York from Buffalo on Lake Erie to Troy and Albany on the Hudson River. The canal was completed in 1825. It joined the entire Great Lakes system with the Atlantic Ocean. The canal provided a route over which manufactured goods could flow into the West, and raw materials could pour into the East. The Erie Canal helped New York City develop into the financial center of the country.

The building of the canal was paid for entirely by the state of New York. It cost \$7,143,789, but it soon earned its price many times over. Between 1825, when the canal was opened, and 1882, when toll charges were abolished, the state collected \$121,461,891.

The original canal was 363 miles (584 kilometers) long. It was 28 feet (8.5 meters) wide at the bottom, 42 feet (12.8 meters) wide at the top, and 4 feet (1.2 meters) deep. It could carry boats that were 80 feet (24 meters) long and 15 feet (4.6 meters) wide, with a draft of 3½ feet (1.1 meters). A larger canal was soon needed, and in

rotating crops, using clean
sses that may harbor the disease.
disease called *ergotism* in human
his disease was common among
made from infected rye grain. The
gangrene and convulsions. The
ically disappeared because of im-
eaning grain. Ergotism was also
s fire.

e of a number of drugs, such as
and *ergotamine*. These are used to
tractions of the involuntary mus-
he blood vessels, bladder, stomach,
. The most common use of these
aine headaches and to prevent
dbirth.

WILLIAM F. HANNA

D.
rt, **LUDWIG** (1897-1977), served as
rmany from 1963 to 1966. He was
an Democratic Union to succeed
rhard had served as an official
n a Republic from its formation
redited with creating the program
Ger-
bility
World



Dalmas, Pix from Publix

Ludwig Erhard

1945.
rd was appointed commissioner of
he state of Bavaria. He planned
t helped stabilize the West
e was elected to the West German
) in 1949 and served as economics
West Germany's postwar cabinets.
or from 1957 until 1963, when he
n 1965, Erhard headed a coalition
tian Democrats and Free Demo-

Eric collected some supplies, loaded his family into his ship, and sailed away from Iceland. He headed west into the unknown ocean. This was about 982. His sentence as an outlaw lasted three years. When the time was up, he sailed back to Iceland. He told an exciting story about a new land he had found which at first seemed to be all ice. But he had followed its coast southward, and had come upon better country. To attract settlers, he named it *Greenland* for its green coasts. Although he did not know it, this was a huge island in the Western Hemisphere. Thus, Eric was the first European to record a voyage across the Atlantic Ocean.

Many Icelanders sailed back to Greenland with Eric. Some ships sank in a storm, but the others got through. The first colony stood near the site of present-day Julianehåb. The colonies the Norsemen founded in 985 lasted for about 400 years.

FRANKLIN L. FORD

See also ERICSON, LEIF; GREENLAND (History).

ERICSON, LEIF (A.D. 980?-1025?), was a Norse explorer who led what was probably the first European expedition to the mainland of North America. He was the son of Eric the Red, who established the first settlement in Greenland. Leif Ericson became the leader of this settlement after his father's death. His life was recorded in long Icelandic stories called *sagas*.

Ericson was born in Iceland, near what is now Búðardalur. His family sailed to southern Greenland about 985, and his father founded a settlement near present-day Julianehåb. About 999, Ericson sailed across the Atlantic Ocean to Iceland and then to Norway, where he became a Christian. He returned to Greenland the following year and preached Christianity in his father's pagan settlement.

Ericson sailed west from Greenland about 1002 to seek a land that had been sighted by a Norse sea captain, Bjarni Herjulfsson. According to the sagas, Ericson and his 35 men first landed at a level stone area that he named *Helluland* (Flat Rock Land). He then sailed farther south to a heavily wooded region that he called *Markland* (Forestland). Ericson continued to sail southward and went ashore at a place where he found grapes growing. The men made wine from the grapes, and Ericson named the place *Vinland* (Wineland). Some historians think the fruit may have been cranberries or gooseberries, and not grapes.

Ericson and his men spent the winter in Vinland. They built a large house for themselves and a shed to protect their ship. The men also cut some logs to bring back to Greenland, where trees were scarce. On their return voyage, they rescued 15 victims of a shipwreck,

warriors wearing helmets with cattle horns on the sides, but the Vikings never had such helmets.

Exploration and Conquest

Scholars link the start of the Viking rampage with several conditions in Scandinavia at the time. Perhaps the most important was a rapidly growing population, which led to overcrowding and a shortage of farmland. In addition, family feuds and local wars made life in Scandinavia difficult for many Vikings. Many other Vikings, especially those who were young, poor, or without land of their own, saw in raiding and conquering a means to obtain wealth and honor.

The **Norwegian Vikings** began the Viking reign of terror. In June 793, Norwegian raiders attacked and looted the monastery of Lindisfarne on an island off the east coast of England. A wave of Norwegian raids against England, Ireland, the Isle of Man, and Scotland followed. Ireland's many fertile farms and rich churches and monasteries made it an especially attractive target. Turgeis, a Norwegian pirate chief, terrorized Ireland from 839 to 845. He founded the town of Dublin and used it as his headquarters.

During the mid-800's, Norwegian raiders struck targets farther from their homeland. They looted and burned towns in France, Italy, and Spain. In the late 800's, many of the Norwegians turned their attention from Europe to the North Atlantic. Norwegian settlers began to migrate to Iceland about 870. About 25,000 Vikings had settled in Iceland by the mid-900's.

About 982, Eric the Red, a Norwegian who had been living in Iceland, sailed with his family to Greenland. About 985, he persuaded several hundred Icelanders to settle in Greenland (see **ERIC THE RED**). Soon afterward, Bjarni Herjulfsson, a Viking sea captain, became the first European to see the mainland of North America. He made the sighting after sailing off course during a voyage from Iceland to Greenland. After Herjulfsson reached Greenland, he told the settlers there about the territory he had passed. Having just arrived in Greenland, the settlers were not interested in exploring other lands at that time.

About 10 years later, after all the good cropland in Greenland had been taken, interest began to grow in the land Herjulfsson had sighted. About 1000, Leif Ericson, a son of Eric the Red, led an expedition westward from Greenland to find the new territory. He and his crew landed somewhere on the east coast of North America and spent the winter there. The Vikings made wine from the plentiful supply of grapes they found, and Ericson called the area *Vinland*, or *Wineland*. See **ERICSON, LEIF**; **VINLAND**.

The Vikings soon established a colony in Vinland. In time, however, they were driven away by Indians and did not return. Some historians believe that Vinland was located in what is now Maine or Massachusetts. Others think Vinland was in the present-day

records of the colony survived.

The **Danish Vikings** began their raids in the early 800's. They looted and burned towns on the coasts of what are now Belgium, France, and The Netherlands. In 865, the Danes invaded England. They conquered all the English kingdoms except Wessex and settled in the eastern half of the country. In 886, Alfred the Great, king of Wessex, forced the Vikings to withdraw to the eastern third of England (see **ALFRED THE GREAT**). This area became known as the *Danelaw*.

During the late 800's, Danish Vikings began to attack French towns again. In 886, King Charles II of France paid the Vikings a huge treasure to end their yearlong siege of Paris. In 911, King Charles III of France and a Danish Viking chieftain named Rollo agreed to the treaty of St. Clair-sur-Epte. According to the treaty, Rollo accepted Christianity and pledged to support the French king. In turn, Charles granted the Vikings control of the area in France now known as *Normandy* (Land of the Northmen). See **NORMANS**.

During the late 900's, the Danish Vikings renewed their interest in England. Ethelred II had become king of England in 978, when he was only about 10 years old. The English nobility refused to support Ethelred, and so England's defense against invasion was much weakened. In 994, Danes led by Sweyn Forkbeard, a son of King Harald Bluetooth of Denmark, went to war against England. In 1016, Sweyn's son Canute finally brought England under Danish control. The Danes ruled England until 1042.

The **Swedish Vikings** began to raid towns along rivers in eastern Europe during the early 800's. They

forts along these routes to protect traders from wandering raiders. By the late 800's, the Russian towns of Novgorod and Kiev had become Swedish strongholds. In time, Kiev became the first state of Russia.

By the mid-900's, the Rus had adopted many of the customs of the Slavic peoples. About 988, the Rus prince Vladimir I destroyed all the symbols of the Viking religion in Kiev and made Christianity the official religion of the Rus.

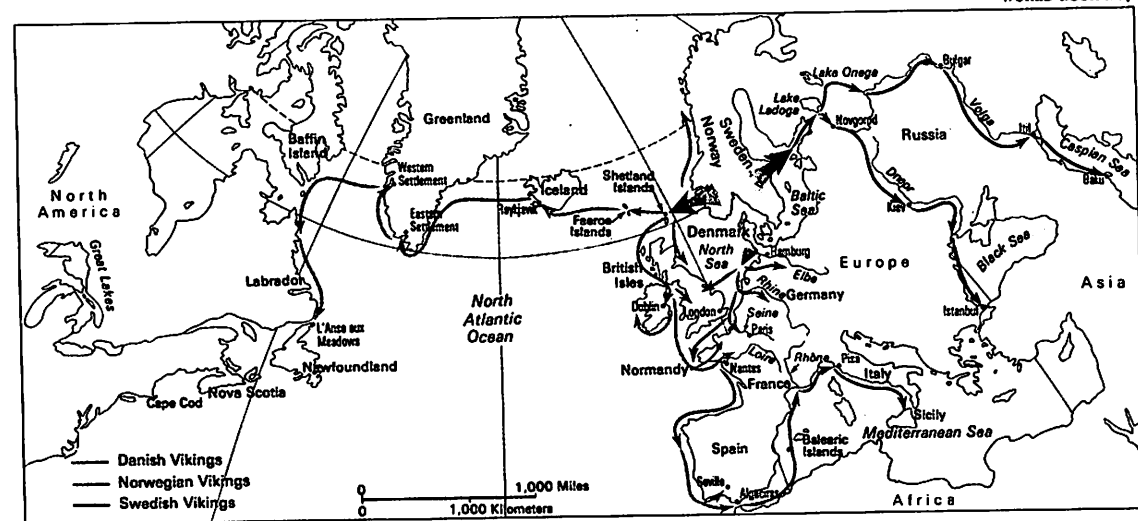
Viking Influence

The most important influence of the Viking period was its effect on Scandinavia. The creation of three strong Viking kingdoms in Scandinavia led to the development of three nations—Denmark, Norway, and Sweden. When the Vikings adopted Christianity, they then brought the countries of Scandinavia into the mainstream of European civilization.

The Norsemen also had an enormous influence on developments in England and France. The Viking invasions of England in the 800's and 900's helped unify and strengthen England. The establishment of Normandy in France in 911 was the source of years of conflict between France and England. William the Conqueror, a Norman descendant of the Viking chieftain Rollo, led a Norman army to victory over the English and became king of England in 1066. England and France later fought for control of Normandy during the Hundred Years' War (1337-1453). See **WILLIAM** (William I, the Conqueror); **HUNDRED YEARS' WAR**.

The Vikings had a lasting effect on Iceland, where they established a permanent settlement that reflects

The Vikings sailed from Scandinavia in three main directions from the A.D. 700's to the 1000's. The Danes went south and raided Germany, France, England, Spain, and the Mediterranean coast. The Norwegians traveled to North America. The Swedes went to eastern Europe.



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